REMARKS/ARGUMENTS

Reexamination and reconsideration of this application as amended is requested. By this amendment, Claims 8, 12, 13, 17, and 21-22 have been amended and new Claim 23 has been added. After this amendment, Claims 8-23 remain pending in this application. Applicant submits that the present response and amendment places the application in condition for allowance or, at least presents the application in better form for appeal. Entry of the present response with amendment is therefore respectfully requested.

Claim Rejections - 35 USC § 102

(3-4) The Examiner rejected Claims 8-9, 11-14, 16-18, and 20-22 under 35 U.S.C. 102(a) as being anticipated by H-Peter Dommel et al., "Ordered End-to-End Multicast for Distributed Multimedia Systems", Proceedings of the 33rd Hawaii International Conference System Sciences, 2000. This rejection is respectfully traversed.

Applicant has amended independent Claims 8, 13, 17, and 21-22 to more clearly and distinctly recite the present invention. Amended Claims 8, 13, 17, 21, and similarly Claim 22 now more clearly and distinctly recite "a multicast packet that distributes a web content object across a network". Amended Claims 8, 13, 17, 21 and similarly Claim 22 also now more clearly and distinctly recite "the multicast packet containing address information for a set of destinations, wherein the address information includes a plurality of addresses each address of the plurality of addresses corresponding to a destination in the set of destinations". Amended Claims 8, 13, and 17 further now more clearly and distinctly recite "determining, based on the address information in the multicast packet, a "next hop" for each of the destinations". Support for these amendments may be found in the specification as originally filed. See, for example, page 5, lines 27-28; page 6, lines 19-28; and page 7, lines 18-19. See Also, U.S. Patent No. 6,625,773, which has been incorporated by reference, col. 3, lines 30-43; col. 3, lines 66-67 to col. 4, lines 1-16;

col. 4, lines 47-54; and col. 8, lines 7-8. No new matter was added.

Claim 12 was amended only for minor clarification purposes, and not for patentability or to further limit in view of any prior art. No new matter was added. New dependent Claim 23, which clearly and distinctly recites the novelty of the present invention, has been added. New Claim 23 recites "wherein at least one of the plurality of addresses is a unicast address". Support for new dependent Claim 23 may be found, for example, in the incorporated U.S. Patent No. 6,625,773, column 3, lines 30-67 to column 4, lines 1-40 and the incorporated U.S. Patent No. 6,415,312, column 3, lines 1-59. No new matter was added.

Dommel et al. teaches ordered end-to-end multicast for distribuited multimedia systems. With resepct to Claims 8, 13, 17, and 21-22, the Examiner directs Applicant to page 2, left column, lines 38-48 of Dommel, wherein Dommel discloses a network model consisting of a set of hosts and communication links. The set of hosts and commuunication links communicate via message passing in the absence of physical clock synchronization. Dommel also teaches a multicast group as being a set of hosts in a network of hosts, which is addressable collectivley by a unique group address. Message dissemination is assumed to be genuine multicast, for example, a source sends a message once to the network interface in a multicast enabled backbone.

The Examiner also directs Applicant to page 4, right column, lines 10-28, wherein Dommel discloses that each source multicasts its message to a multicast group where it is entered in the order of collective arrival into a window for unordered messages. Control messages are routed from source nodes across their parents to the first common prefix node where they are intermittently ordered with revised sequence numbers. Dommel also discloses that at any node on the path, a bitmask operation on the matching prefix indicates which messages must be up-routed or handled locally. The node having a label that matches the longest prefix of the source node labels will be identified as the ordering node. The ordering node sequences and multicasts updated message headers to the

multicast group to signal that the associated messages can be delivered.

Additionally, the Examiner directs Applicant to page 3, left column, lines 11-23, wherein Dommel discloses a Tree-based Ordered Multicast ("TOM") protocol. The TOM protocol relies on an underlying reliable multicast tree for propagation of ordering information besides acknoowledgements and retransmissions. Dommel assumes that hosts do not fail and network partitions do not occur. Trees can be constructed per source, which amortizes itself only for long-lived or large volume transmissions. Alternatively, dissemiantion can be based on a shaded tree, across which (negative) acknowledgments are relayed between hosts. In such a tree, sources may change frequently, only one collective infrastructure mut be maintained, and a source need not know the indentity of all receivers in the multicast group.

Regarding Claims 13, 17, and 21, the Examiner further directs Applicant to page 3, right column, lines 23-29, wherein Dommel teaches that a TOM message consists of a control header and body. The control header includes a source identifier and a target receiver set. The target receiver set is either a multicast group or a collection of individual node identifiers. The control header also includes a sequence number that is used for ordering; an optional time stamp for ordering using timing information at nodes; and an ordering flag indicating that a binding sequence number for a message has been sent.

In contrast, as now recited for amended Claims 8, 13, and 17, the present invention, recites among other things, "receiving a multicast packet that distributes **a web content object across a network**". Amended Claims 21 and 22 similarly recite, among other things, "a multicast packet that distributes **a web content object across a network**" and "receiving a packet corresponding to a reliable multicast transmission of **a web content object**", respectively.

Additionally, amended Claim 8 recites "determining, based on address

information for a set of destination, the address information including **a plurality of addresses each address of the plurality of addresses corresponding to a destination in a set of destinations**, one or more "next hops" that the multicast packet should be forwarded to". Amended Claims 13, 17, 21 and similarly Claim 22 recite "the multicast packet containing address information for a set of destinations, wherein the address information includes **a plurality of addresses each address of the plurality of addresses corresponding to a destination in the set of destinations**".

Dommel does not teach, anticipate or suggest "a multicast packet that distributes **a web content object across a network**", as recited for amended Claims 8, 13, 17, 21, and similarly amended Claim 22. Nowhere does Dommel teach, anticipate, or even suggest **web content objects**. In fact, Dommel explicitly discloses **multi-media data**, which is not the same as a **web content object**. See Dommel, in the Title; page 2, right column, lines 6-17; page 3, left column, lines 3-4; and page 9, right column, lines 39-43. One of the novel aspects of the present invention is that receivers that have requested web content objects receive the requested objects in a unicast way but by a novel multicast delivery scheme. Therefore, amended Claims 8, 13, 17, and 21-22 distinguish over Dommel for at least this reason.

As discussed above, the Examiner cites Dommel at page 3, right column, lines 23-29, however, neither here nor anywhere else does Dommel teach, anticipate, or even suggest, a "multicast packet containing address information for a set of destinations, wherein **the address information includes a plurality of addresses each address of the plurlaity of addresses corresponding to a destination in the set of destinations**", as recited for amended Claims 8, 13, 17, and 21. Dommel teaches a control header m^h that inclues the target receiver set, which is either a multicast group or a collection of individual nodes. See Dommel at page 3, right column, lines 23-29. The control header (control message) is a unicast packet, not a multicast packet. See for example, Dommel at page 3, left column, lines 51-53, ("**a control message unicast** from SN across PN to th ON..."); see page 4, right column, lines 23-25, ("The only overhead incurred in the

ordering process is **the control message unicast** from SNs to some ON, plus some multicast to the receiver set."); and see also page 4, left column, lines 40-42 ("Procedure TOM_send() multicasts a message to the recevier set and **unicasts the control header** towards the dynamically elected ON"). Therefore, Dommel does not anticipate, teach or suggest a "multicast packet containing address information for a set of destinations, wherein **the address information includes a plurality of addresses each address of the plurality of addresses corresponding to a destination in the set of destinations**" as recited by the present invention. Accordingly, amended Claims 8, 13, 17, and 21 distinguish over Dommel for at least this reason as well.

Additionally, any multicast packet disclosed by Dommel comprises a single group address. For example, all throughout the disclosure Dommel teaches sending a multicast message from a source to a receiver group or groups. See for example, Dommel at page 1, right column, lines 31-34; page 2, right column, lines 3-7, 12-15, 24-25, and 44-46; page 3, right column, lines 7-8, 14-18, 29-31, and 50-51; page 4, left column, lines 8-9; page 4, right column, lines 10-11 and 32-34. Dommel defines a multicast group as a set of k hosts in a network of H hosts, **which is addressable collectively by a unique group address**. See Dommel at page 2, left column, lines 43-45. Therefore, because Dommel only discloses a multicast packet with a single multicast group address Dommel does not teach, anticipate, or suggest a multicast packet containing **a plurality of addresses each address corresponding to a destination in a set of destinations** as claimed for amended Claims 8, 13, 17, 21, and similarly claimed for Claim 22. Also, Dommel does not teach, anticipate, or suggest that at least one of the plurality of addresses is a unicast address, as recited new Claim 23. Accordingly, amended Claims 8, 13, 17, 21 and 23 distinguish over Dommel for at least this reason as well.

Furthermore, Dommel does not teach, anticipate, or suggest "determining, based on the address information in the multicast packet, one or more "next hops" that the multicast packet should be forwarded to", as recited for amended Claims 8, 13, 17. As discussed in the preceding paragrpah, Dommel teaches a single group address and not a

multicast packet containing **a plurality of addresses each address corresponding to a destination in a set of destinations.** Therefore, Dommel does not teach, anticipate, or suggest the determing step based on address information containing a plurality of addresses each address of the plurality of addresses corresponding to a destination in a set of destinations, as recited for amendned Claims 8, 13, and 17. Accordingly, amended Claims 8, 13, and 17 distinguish over Dommel for at least this reason as well.

Therefore, in view of the amendments and remarks above, Applicant submits that Dommel does not teach, anticipat, or suggest the presently claimed "multicast packet that distributes a web content object across a network"; "the multicast packet containing address information for a set of destinations, wherein the address information includes a plurality of addresses each address of the plurality of addresses corresponding to a destination in the set of destinations"; or "determining, based on the address information in the multicast packet, one or more "next hops" that the multicast packet should be forwarded to". Applicant, therefore, believes that the rejection of Claims 8, 13, 17, and 21-22 has been overcome, and that new Claim 23 also recites in allowable form. The Examiner should withdraw the rejection of Claims 8, 13, 17, and 21-22. Applicant kindly urges the Examiner to allow Claims 8, 13, 17, and 21-22, and new Claim 23.

Claims 9-12 and 23, 14-16, 18-20 depend either directly or by way of an intervening claim from Claims 8, 13, and 17 respectively, and since dependent claims recite all of the limitations of the independent claim; it is believed that, therefore, claims 9-12 and 23, 14-16, 18-20 also recite in allowable form. However, additional arguments with respect to Claims 9 and 12 are given below.

The Examiner states that TOM, as taught by Dommel, is Small Group Multicast. However, Dommel teaches using standard multicast where a group of hosts in a network are **addressable collectively by a unique group address.** See Dommel at page 2, left column, lines 43-45. Also, Dommel teaches that "[e]ach host programs its local network interface to subscribe to multicast packets on the same local network, or to receive

packets from routers based on IGMP information." IGMP is the Internet Group Management Protocol and is used to establish host memberships in particular multicast groups on a single network. The mechanisms of the protocol allow a host to inform its local router, using Host Membership Reports that it wants **to receive messages addressed to a specific multicast group**. See www.webopedia.com.

Small Group Multicast ("SGM") on the other hand, as defined by the present invention and in the incorporated U.S. Patent Nos. 6,415,312; 6,502,140; and 6,625,773, uses an explicit list of unicast addresses. For example, a source wanting to forward packets to a plurality of hosts can send an SGM packet that includes a list of destinations (the plurality of hosts) to its default router. The SGM packet contains a list of unicast addresses and not a single address of a multicast group. See for example, incorporated U.S. Patent No. 6, 625,773, column 3, lines 30-67 to column 4, lines 1-40. On the other hand, Dommel teaches using only a single group multicast address. This is very different than the presently claimed invention.

Furthermore, TOM, as taught by Dommel, is not so much a multicast method (let alone a SGM method) but rather a mechanism for augmenting **standard multicast traffic** (non-SGM traffic) with unicast control so that the order of packets received in standard multicasts or multiple multicasts can be consistent when multiple packets from sources are received at different receivers. For example, Dommel teaches on page 4, right column, lines 32-34 that the only overhead incurred in the ordering process is the control message unicast from SNs to some ON, plus one multicast to the receiver set. Therefore, Dommel does not teach, anticipate, or suggest Small Group Multicast as recited for Claims 9 and 12.

ALLOWABLE SUBJECT MATTER

(5) The Examiner objected to Claims 10, 15, and 19 as being dependent on a rejected base claim, but indicated that these claims would be allowable if rewritten in independent

form including all limitations of the base claim and any intervening claims. The Applicant would like to thank the Examiner for acknowledging allowable subject matter. However, in view of the amendment and remarks above, Applicant believes that Claims 10, 15, and 19 now recite in allowable form. Accordingly, Applicants kindly request that the Examiner withdraw the objection to these claims.

INAPPROPRIATE FINAL STATUS OF OFFICE ACTION IN VIEW OF NEWLY CITED ART DOMMEL ET AL.

The Examiner made the Office Action final based on a new ground of rejection not stated in the earlier Office Action. Applicant respectfully traverses this decision. In the Final Office Action, the Examiner rejects the present claims by citing H-Peter Dommel et al., "Ordered End-to-End Multicast for Distributed Multimedia Systems", Proceedings of the 33rd Hawaii International Conference System Sciences, 2000. The Applicants respectfully point out that the Dommel et al. reference was not cited in any previous Office Action. Additionally, Applicant submitted a Declaration under 37 C.F.R. § 1.131 to remove the Boivie et al. reference as prior art and any amendment made was substantially consistent with subject matter already presented. Accordingly, Applicant believes that a final Office Action is improper in view of the removed Boivie et al. reference.

According to MPEP § 706.07(a): "Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p)."

In the previous Office Action dated June 17, 2004 (Paper No. 5), the Examiner rejected Claims 8-10, 12-15, and 17-19 under 35 U.S.C. § 102(a) and (f) as being

anticipated by Rick Boivie et al., "Small Group Multicast: A New Solution for Multicasting on the Internet", IEEE Internet Computing, p. 75, p. 79, May 2000. Also in this previous Office Action the Examiner rejected claims 11, 16, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Boivie et al., in view of McCanne et al. (6,415,323).

As stated above, in the previously-filed amendment, Applicant submitted a Declaration under 37 C.F.R. § 1.131 removing the Boivie et al. publication as a prior art reference. Claims 8 and 10-20 were amended for clarity and the following additional limitation was also added to Claims 1, 13, and 17: "sending ACKs and/or NAKs between an intermediate node and another node of a network for reliably delivering a multicast packet to a destination information processing unit". Additionally, new claims 21 and 22 were added and included language substantially consistent with the specification as originally filed.

Applicant respectfully submits that the final status of the Office Action is premature and requests that the final status be withdrawn.

In any case, Applicant kindly submits that this response with amendment does not raise new issues in the application. It is submitted that the present response with amendment places the application in condition for allowance, or at least presents the application in better form for appeal. Entry of the present response with amendment is therefore respectfully requested.

CONCLUSION

The foregoing is submitted as full and complete response to the Official Action mailed January 13, 2005, and it is submitted that Claims 8-23 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of Claims 8-23 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicant acknowledges the continuing duty of candor and good faith to disclosure of information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicant and the attorneys.

The present application, after entry of this amendment, comprises sixteen (16) claims, including five (5) independent claims. Applicant has previously paid for twenty (20) claims including six (6) independent claims. Applicant, therefore, believes that an additional fee for claims amendment is currently not due.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account **50-1556**.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

Date: March 14, 2005

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